

WHAT IS CLAIMED IS:

1. A method of repairing the end fittings of a water-cooled stator bar having a plurality of copper strands brazed with an original alloy into an end fitting surrounding one end of said strands, comprising the steps of:

disconnecting the inlet and outlet end fittings of said stator bar from its respective inlet and outlet cooling headers, and

applying a protective coating consisting of Sc, Ti, Cr, Zr, Nb, Mo, Hf, Ta, W, Ni, and Al, and their alloys or oxides to one or more brazed joints of said copper strands in said stator bar.

2. A method according to claim 1, wherein said step of applying a protective coating results in a coating thickness of between 0.5 and 50 microns.

3. A method according to claim 1, wherein said step of applying said protective coating includes the use of a pencil coater inserted into said inlet or outlet fitting of said stator bar to coat said brazed joints using an ion plasma deposition process.

4. A method according to claim 1, further comprising the step of exposing said protective coating applied to said brazed joints to water to oxidize said protective coating.

5. A method according to claim 1, further comprising the steps of removing the top portion of said

stator bar to expose the ends of said copper strands disposed in the bottom portion of said stator bar, applying said protective coating to said exposed ends and reassembling said top and bottom portions.

6. A method of repairing the end fittings of a water-cooled stator bar having a plurality of copper strands brazed with an original alloy into an end fitting surrounding one end of said strands, comprising the steps of:

disconnecting the inlet and outlet end fittings of said stator bar from their respective inlet and outlet cooling headers,

cutting an end portion of said inlet or outlet end fittings into two segments having a mated dovetail configuration along a line generally transverse to said copper strands and at a location intermediate said end fitting and said copper strands,

applying a protective coating to the exposed brazed joints of said copper strands present in one segment of said stator bar; and

permanently rejoining said segments of said stator bar along the mated dovetail after said protective coating is applied.

7. A method according to claim 6, wherein said step of applying a protective coating includes the use of Sc, Ti, Cr, Zr, Nb, Mo, Hf, Ta, W, Ni, and Al, and their alloys or oxides.

8. A method according to claim 6, wherein said step of applying a protective coating results in a coating thickness of between 0.5 and 50 microns.

9. A method according to claim 6, further comprising the step of exposing said protective coating applied to said brazed joints to water to oxidize said protective coating.

10. A water-cooled stator bar comprising (a) a plurality of hollow and solid copper strands having brazed joints connecting said copper strands to one another and to inlet and outlet end fittings for said stator bar; and (b) a protective coating of Sc, Ti, Cr, Zr, Nb, Mo, Hf, Ta, W, Ni, and Al, and their alloys or oxides applied to selected portions of said brazed joints of said copper strands and said end fittings.

11. A liquid-cooled stator core winding arrangement comprising, a stator core, stator core flanges, core ribs, a plurality of stator bars passing radially through extending slots in said stator core and terminating at opposite ends in inlet and outlet end fittings connecting to respective inlet and outlet liquid cooling headers, each said stator bar further comprising a plurality of hollow and solid copper strands, brazed joints connecting said copper strands to one another and to inlet and outlet end fittings for said stator bar, and a protective coating of Sc, Ti, Cr, Zr, Nb, Mo, Hf, Ta, W, Ni, and Al, and their alloys or oxides applied to selected portions of said brazed joints of said copper strands and said end fittings.